INTRODUCTION

The Ecosystem Considerations appendix is comprised of three main sections:

i. Ecosystem Assessment
ii. Ecosystem Status Indicators
iii. Ecosystem-based Management Indices and Information.

The purpose of the first section, Ecosystem Assessment, is to summarize historical climate and fishing effects on the eastern Bering Sea/Aleutian Islands and Gulf of Alaska ecosystems using information from the other two sections and stock assessment reports. In future drafts, the Ecosystem Assessment section will also provide an assessment of the possible future effects of climate and fishing on ecosystem structure and function.

The purpose of the second section, Ecosystem Status Indicators, is to provide new information and updates on the status and trends of ecosystem components to stock assessment scientists, fishery managers, and the public. The goals are to provide stronger links between ecosystem research and fishery management and to spur new understanding of the connections between ecosystem components by bringing together many diverse research efforts into one document.

The purpose of the third section, Ecosystem-based Management Indices and Information, is to provide either early signals of direct human effects on ecosystem components that might warrant management intervention or to provide evidence of the efficacy of previous management actions. In the first instance, the indicators are likely to be ones that summarize information about the characteristics of the human influences (particularly those related to fishing, such as catch composition, amount, and location) that are influencing a particular ecosystem component.

Since 1995, the North Pacific Fishery Management Councils (NPFMC) Groundfish Plan Teams have prepared a separate Ecosystem Considerations section to the annual SAFE report. Each new Ecosystem Considerations section provides updates and new information to supplement the original section. The original 1995 section presented a compendium of general information on the Bering Sea, Aleutian Island, and Gulf of Alaska ecosystems as well as a general discussion of ecosystem based management. The 1996 Ecosystem Considerations section provided additional information on biological features of the North Pacific, and highlighted the effects of bycatch and discards on the ecosystem. The 1997 Ecosystems Considerations section provided a review of ecosystem–based management literature and ongoing ecosystem research, and provided supplemental information on seabirds and marine mammals. The 1998 edition provided information on the precautionary approach, essential fish habitat, an overview of the effects of fishing gear on habitat, El Nino, collection of local knowledge, and other ecosystem information. The 1999 section again gave updates on new trends in ecosystem-based management, essential fish habitat, research on effect of fishing gear on seafloor habitat, marine protected areas, seabirds and marine mammals, oceanographic changes in 1997/98, and local knowledge.

In 1999, a proposal came forward to enhance the Ecosystem Considerations section by including more information on ecosystem indicators of ecosystem status and trends and more ecosystem-based management performance measures. This enhancement, which will take several years to fully realize, will accomplish several goals:

1) Track ecosystem-based management efforts and their efficacy
2) Track changes in the ecosystem that are not easily incorporated into single-species assessments
3) Bring results from ecosystem research efforts to the attention of stock assessment scientists and fishery managers,
4) Provide a stronger link between ecosystem research and fishery management, and

5.) Provide an assessment of the past, present, and future role of climate and humans in influencing ecosystem status and trends.

The 2000-2005 Ecosystem Considerations sections included some new contributions in this regard and will be built upon in future years. Evaluation of the meaning of the observed changes needs to be done separately and in the context of how the indicator relates to a particular ecosystem component. For example, particular oceanographic conditions such as bottom temperature increases might be favorable to some species but not for others. Future evaluations will need to follow an analysis framework, such as that provided in the draft Programmatic groundfish fishery environmental impact statement that links indicators to particular effects on ecosystem components.

In 2002, stock assessment scientists began using indicators in this chapter to systematically assess ecosystem factors such as climate, predators, prey, and habitat that might affect a particular stock. Also, information regarding a particular fishery's catch, bycatch and temporal/spatial distribution will be used to assess possible impacts of that fishery on the ecosystem. Indicators of concern can be highlighted within each assessment and could be used by the Groundfish Plan Teams and the Council to justify modification of allowable biological catch recommendations or time/space allocations of catch.

It was requested that contributors to the ecosystem considerations chapter provide actual time series data or make it available electronically. Most of the time series data for contributions are now available on the web, with permission from the authors. It is particularly important that we spend more time in the development of ecosystem-based management indices. Ecosystem-based management indices should be developed to track performance in meeting the stated ecosystem-based management goals of the NPFMC, which are:

1. Maintain biodiversity consistent with natural evolutionary and ecological processes, including dynamic change and variability.
2. Maintain and restore habitats essential for fish and their prey.
3. Maintain system sustainability and sustainable yields for human consumption and nonextractive uses.
4. Maintain the concept that humans are components of the ecosystem.

Ecosystem Considerations sections from 2000 to the present are available on the Alaska Fisheries Science Center website at: http://access.afsc.noaa.gov/REFM/REEM/EcoWeb/EcosystemIndex.cfm
And at: http://www.afsc.noaa.gov/refm/stocks/assessments.htm
If you wish to obtain a copy of an Ecosystem Considerations Chapter version prior to 2000, please contact the Council office (907) 271-2809.